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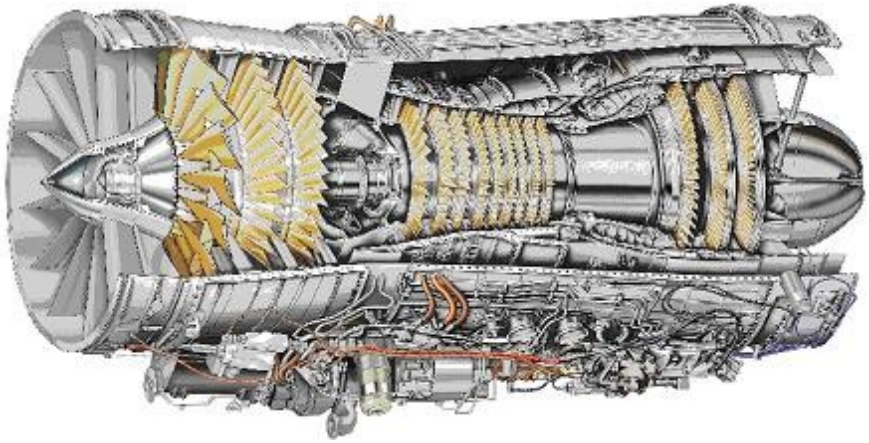
F118-GE-101/U-2



PM – BOB PERRAUT

WR-ALC/LXAE

1 Sep 2004

OVERVIEW

Rapidly delivering war-winning capability

- Background
- Metrics
- Issues
- Life Management
- Assessment

F118-GE-101 IPT

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- **Lead: Bob Perraut**
- **Engineering: Steve Kaldon**
- **Item Management: Lavonia Abram**
- **Contracting: Sue Smith**
- **Finance: Wanda Bragg / Adair Rambo**
- **Logistics Support: Weyman Bond**
- **Technical Services: MSgt Mike Stefanos**
- **SETA Support: Rod Bryan**
- **GE Model Engineer: Eric Lewis**
- **GEAE Program Manager: David Kuehner**

ENGINE LOCATIONS

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36 Aircraft **55 Engines**

20 U-2S / 5 U-2ST / 2 ER-2 **117903.8 EFH**

LOCATION	A/C	SPARES	OTHERS
Beale AFB	16	7	
PDM	4	0	
Site 2 (Palmdale)	2	0	
Det 4	6	3	
Cyprus		3	1
Osan	3	2	
NASA	2	0	
GEAE Edwards		N/A	N/A (2 INW)
Depot (KAC)	N/A	N/A	(3 INW) (1 AWM)

MASTER SCHEDULE

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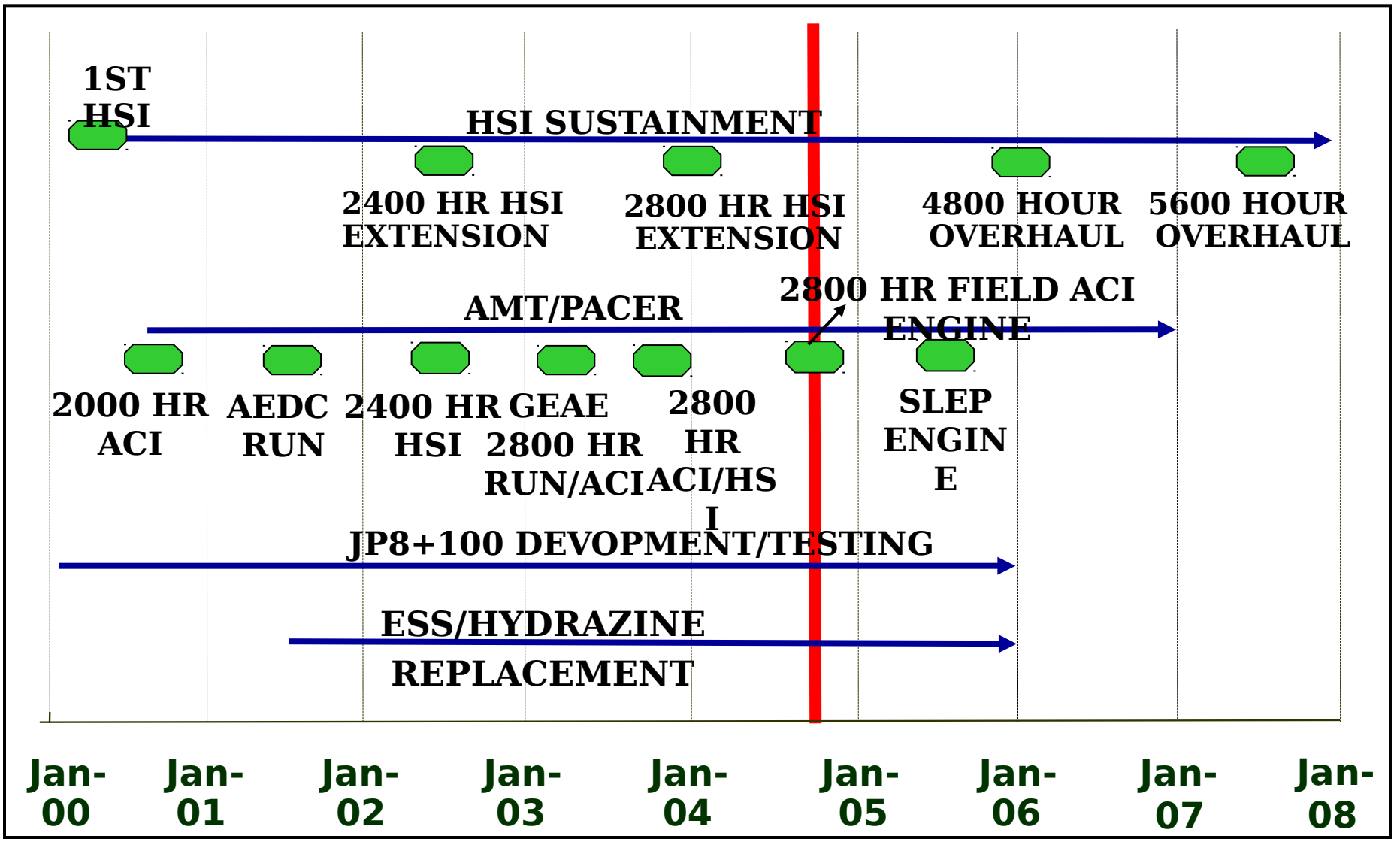

Class A Rate Engine Related

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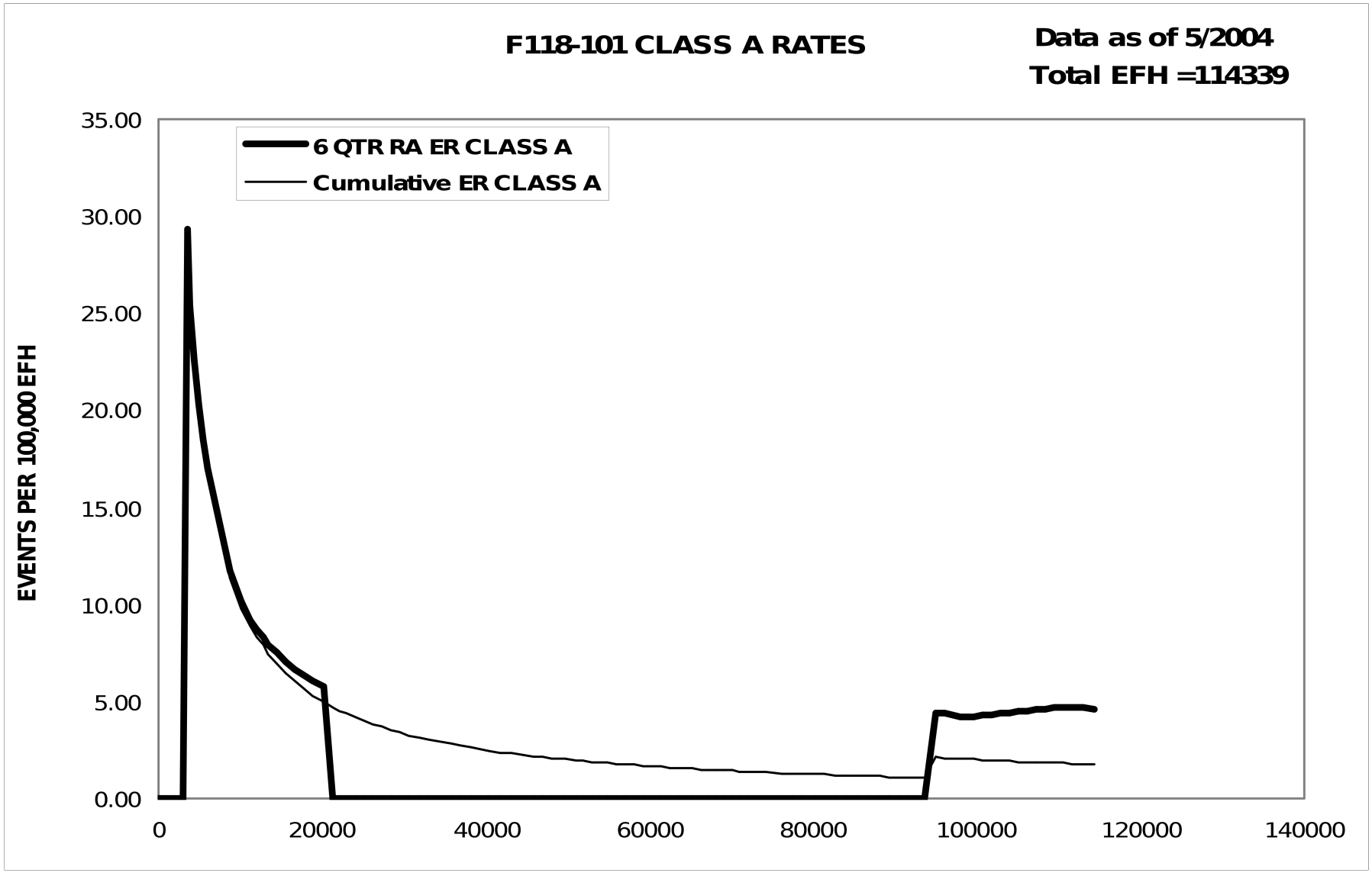

NRIFSD

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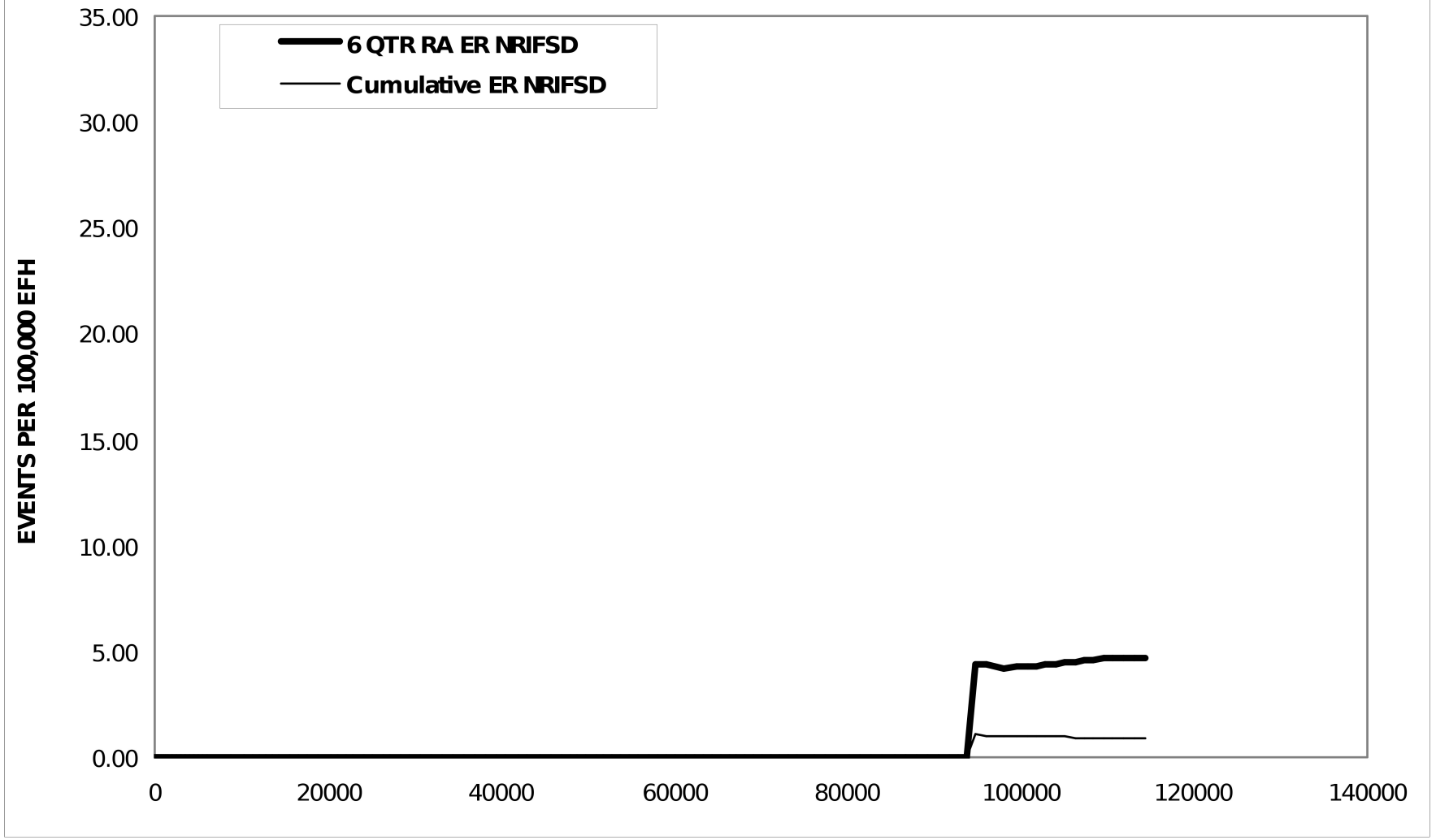

BASE STOCK LEVEL

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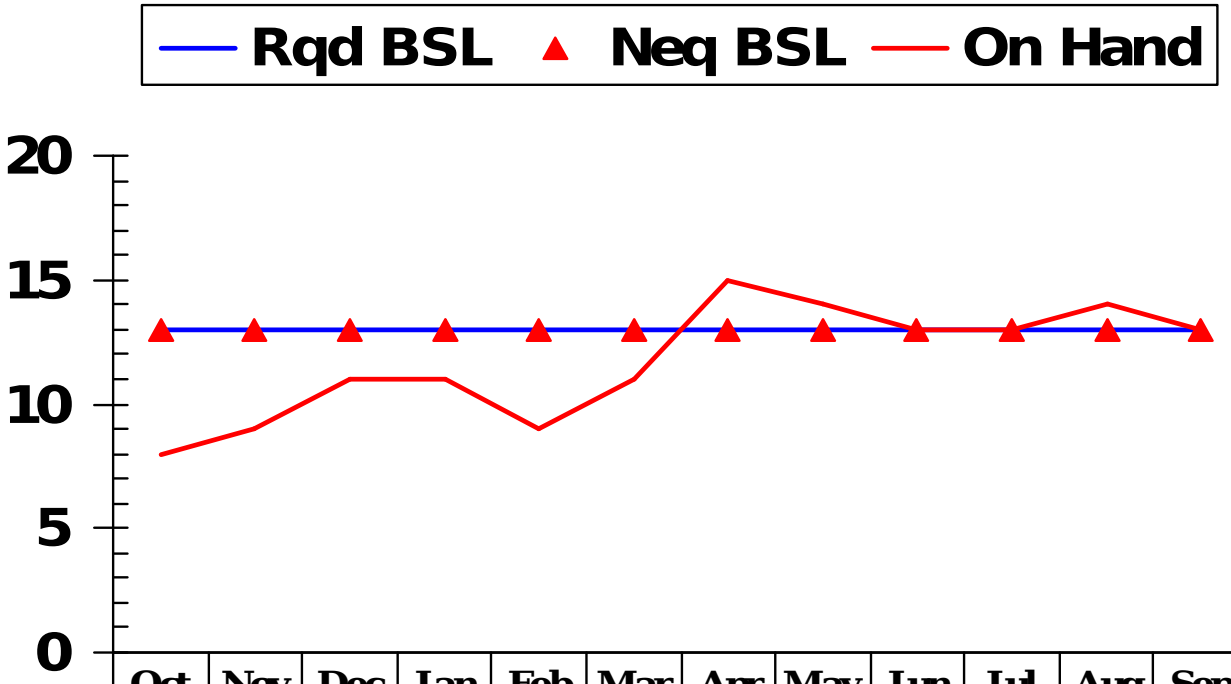
G

- **Issues**

  None

- **Action Plan**

  None



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Rqd BSL	13	13	13	13	13	13	13	13	13	13	13	13
Neq BSL	13	13	13	13	13	13	13	13	13	13	13	13
On Hand	8	9	11	11	9	11	15	14	13	13	14	13

As of 1 Sep 04

GET WELL DATE: N/A

SERVICEABLE SPARES

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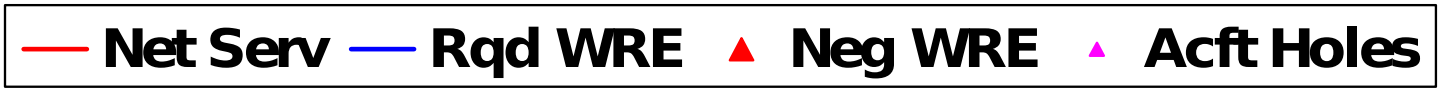
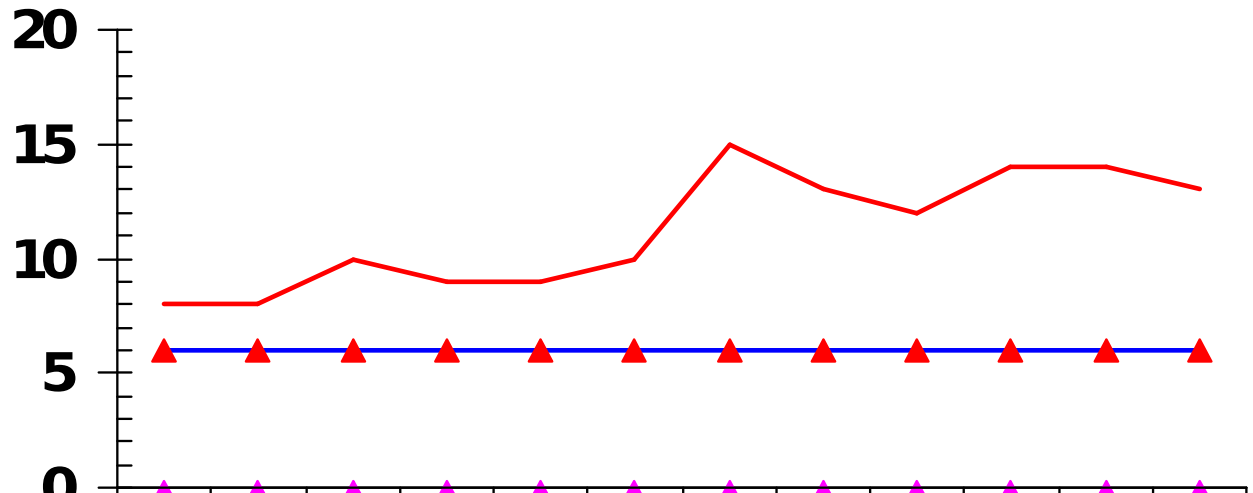


- **Issues**

  None

- **Action Plan**

  None



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Net Serv	8	8	10	9	9	10	15	13	12	14	14	13
Rqd WRE	6	6	6	6	6	6	6	6	6	6	6	6
Neg WRE	6	6	6	6	6	6	6	6	6	6	6	6
Acft Holes	0	0	0	0	0	0	0	0	0	0	0	0

As of 1 Sep 04

GET WELL DATE: N/A

ENMCS

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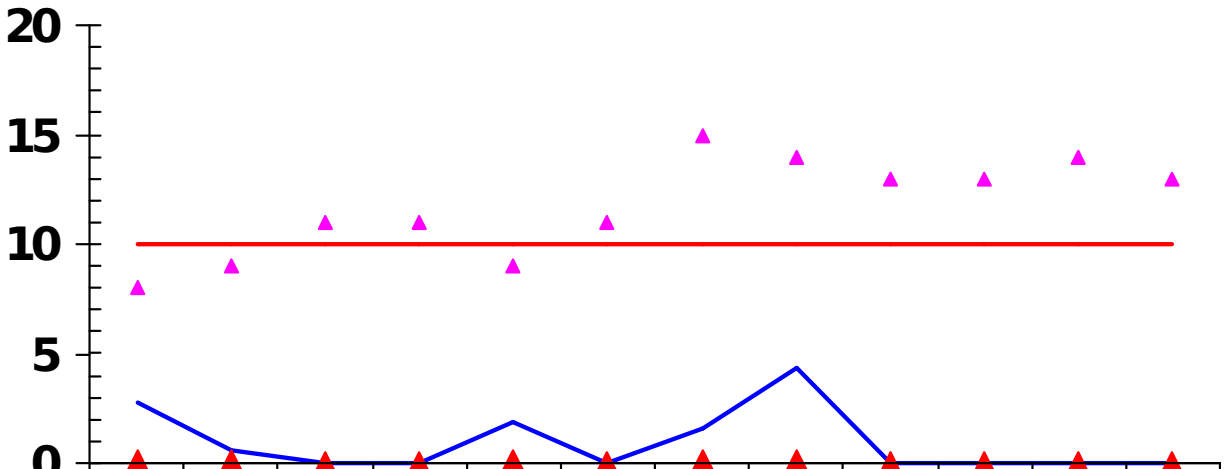
G

- **Issues**

  None

- **Action Plan**

  None



	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Goal	10	10	10	10	10	10	10	10	10	10	10	10
ENMCS %	2.75	0.58	0.00	0.00	1.90	0.00	1.59	4.39	0.00	0.00	0.00	0.00
#ENMCS Engines	0.12	0.12	0.00	0.00	0.11	0.00	0.06	0.07	0.00	0.00	0.00	0.00
Uninstalled	8	9	11	11	9	11	15	14	13	13	14	13

1 Sep 03 – 31 Aug 04

GET WELL DATE: N/A

MICAP STATUS

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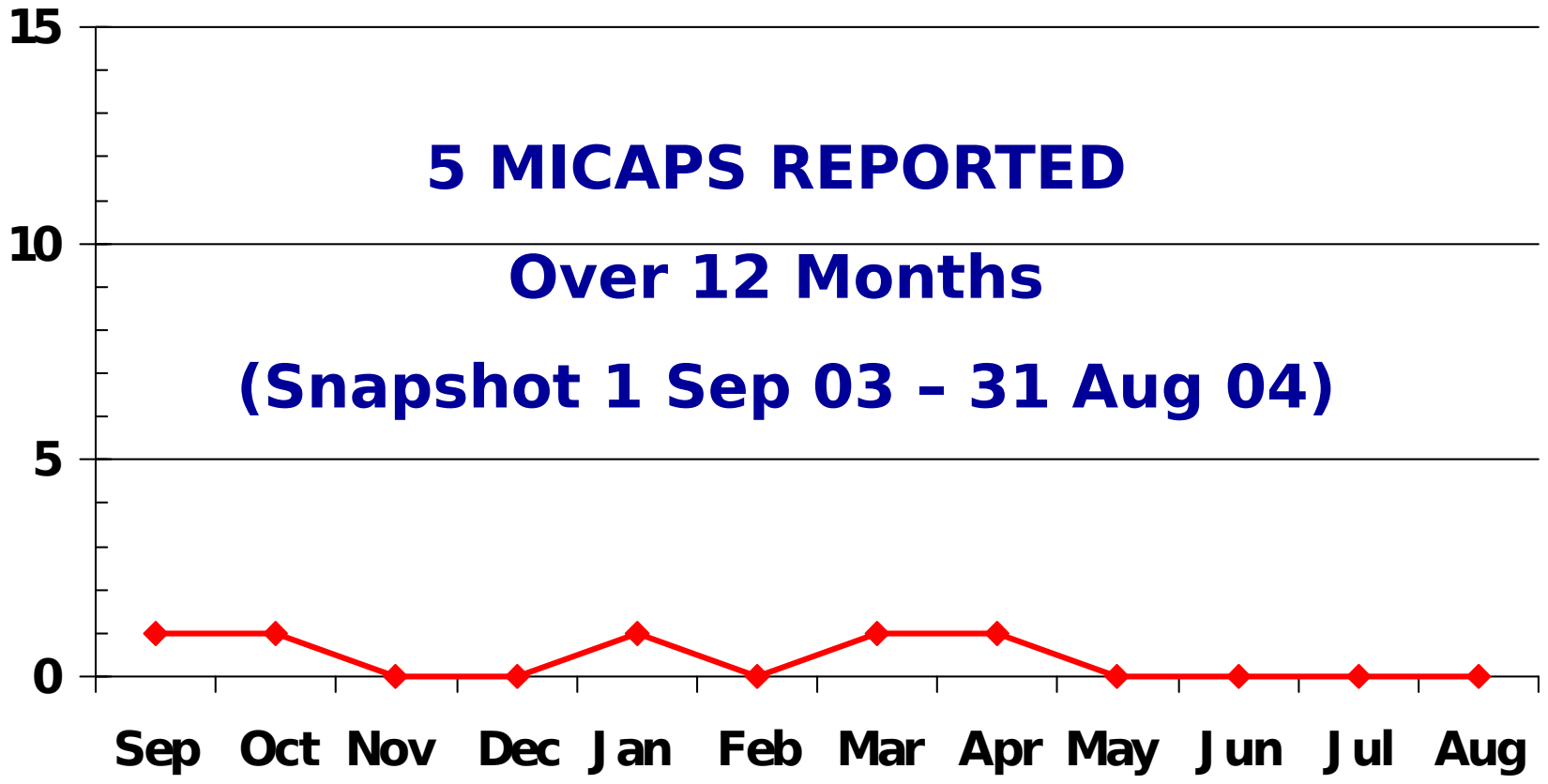

AVERAGE TIME ON WING

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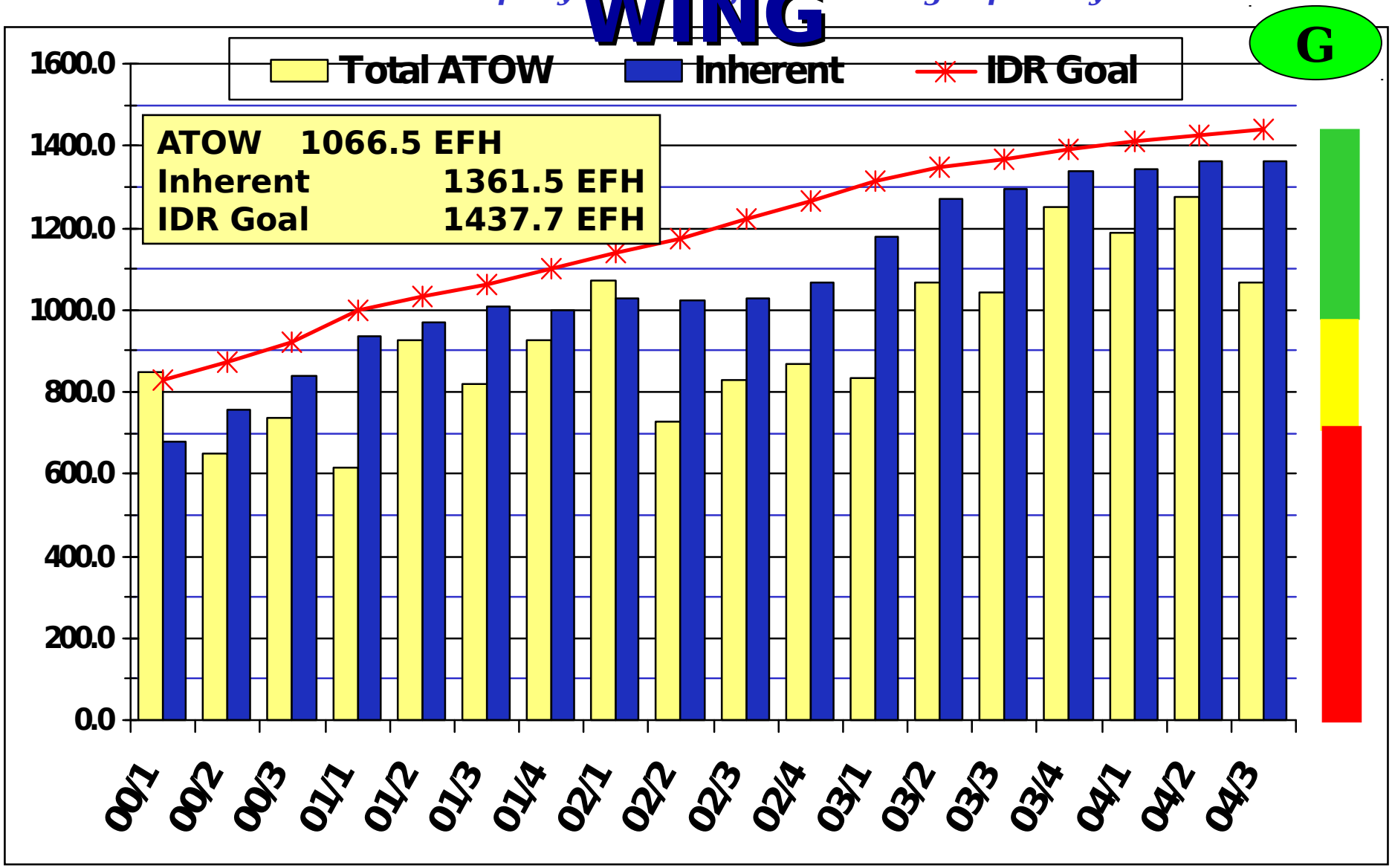

1 Sep 03 – 31 Aug 04
Unscheduled Engine Removal Rate

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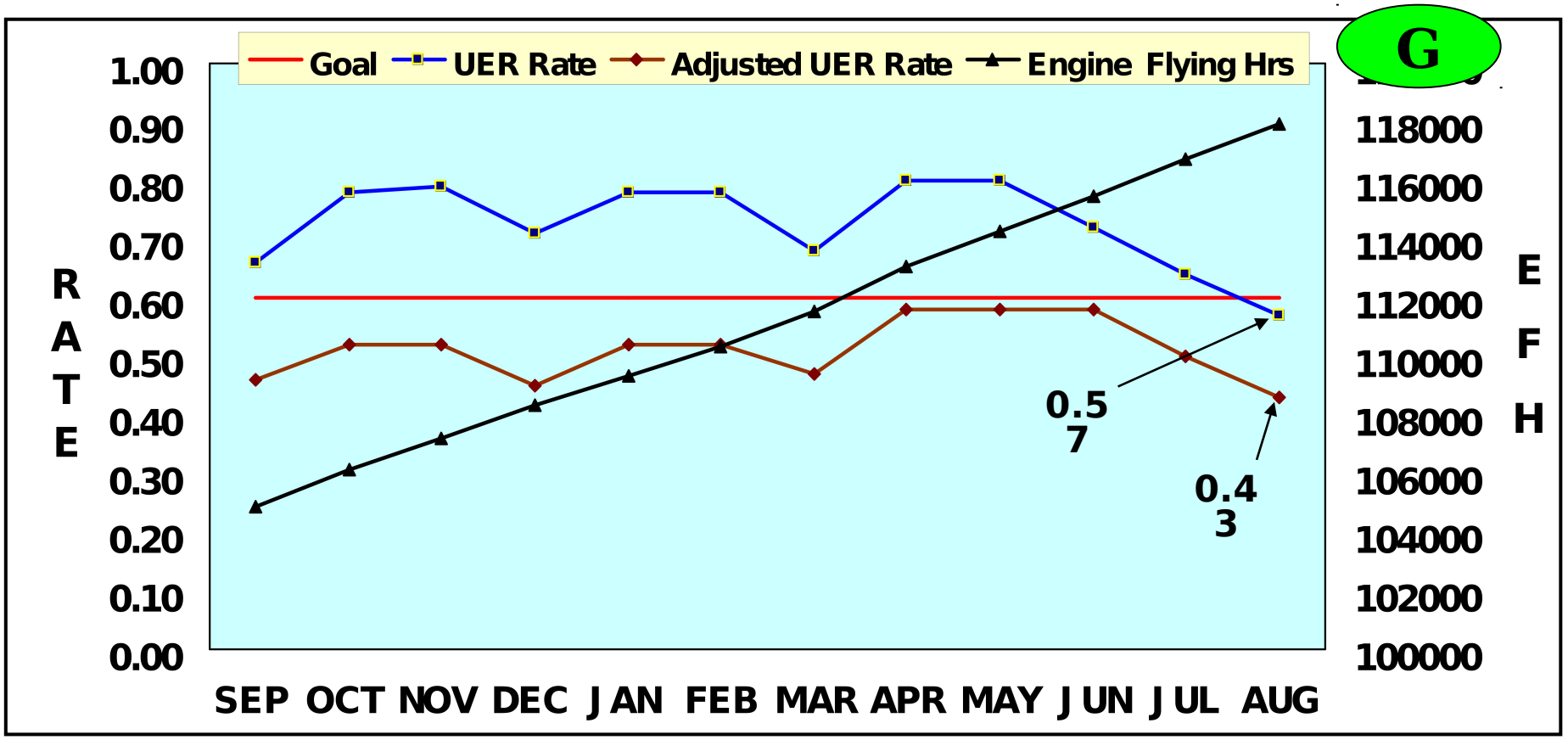

NOTE:

<u>Adjusted UER Rate</u> – Does not include those engines pulled where an ACFT problem was identified as the cause; no action was taken on the engine or CND at depot.

590146 – High Fuel Consumption – No consumption noted at test cell

590133 – Engine Vibration – Engine sent from OL straight to Beale AFB

590134 – Low Power/Thrust – Engine sent to depot, replaced EFTC and Pyrometer

Flight Hour Distribution

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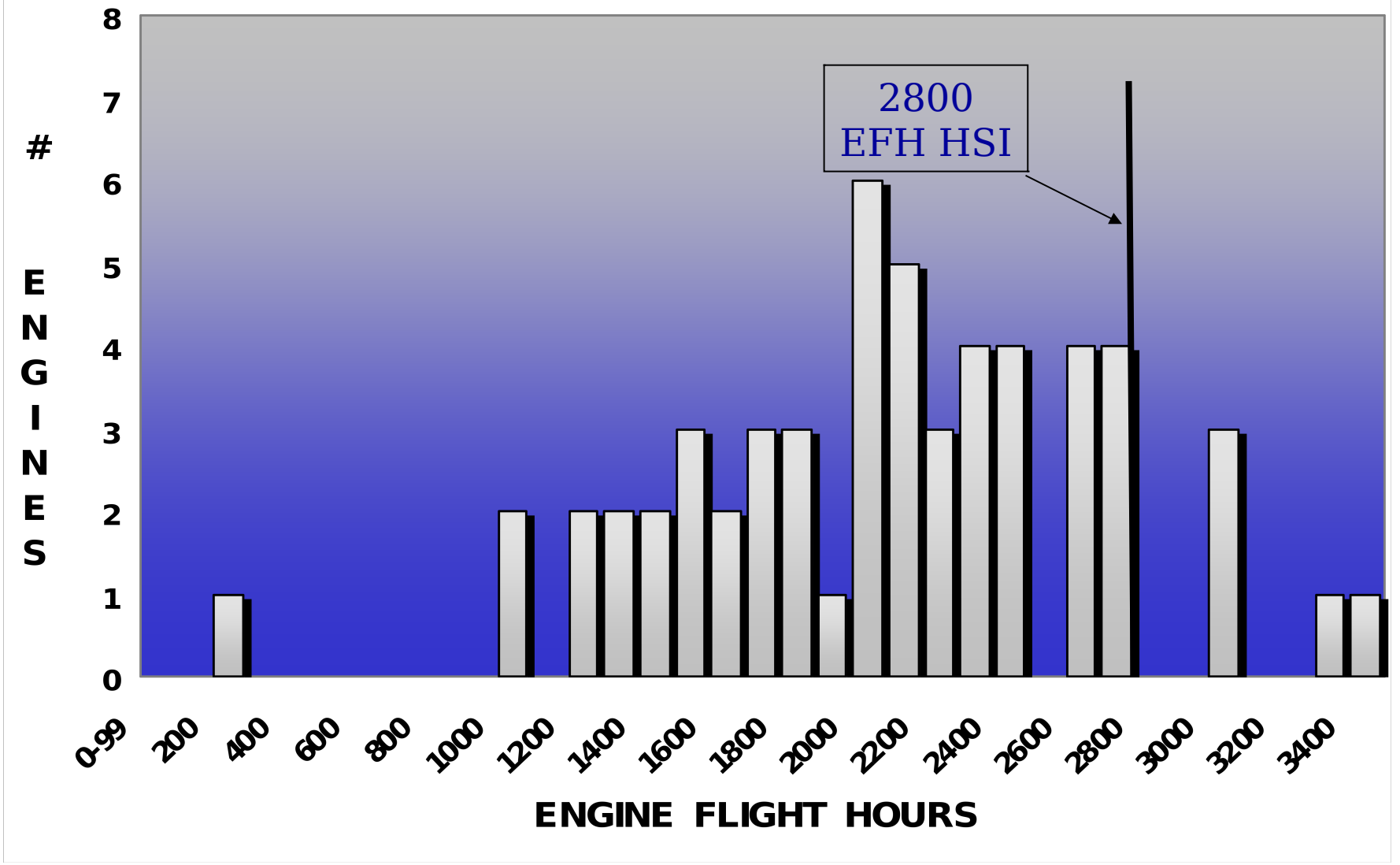

Engine Cycle Distribution

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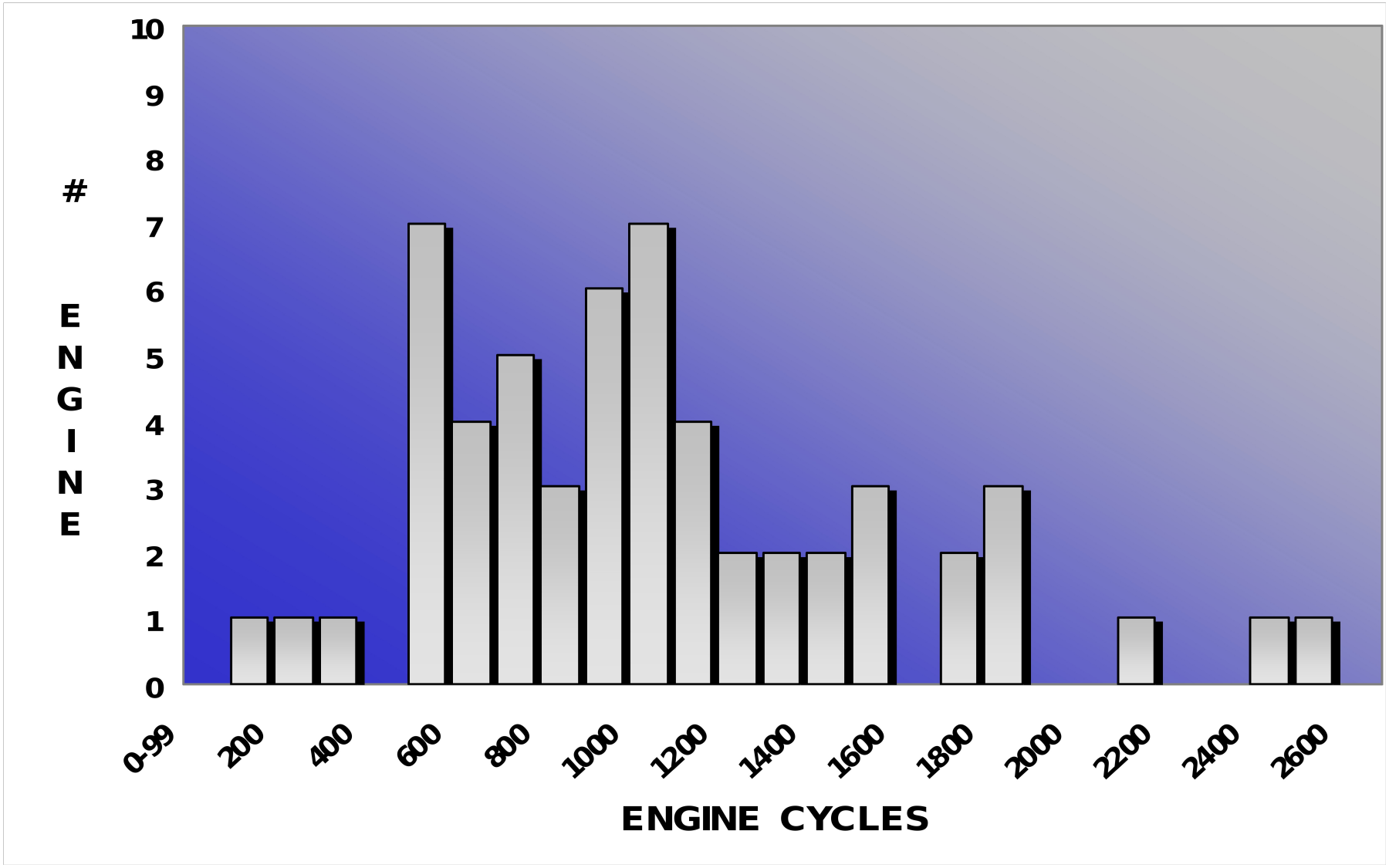

REMOVALS
1 Jan 03 – 31 Aug 04

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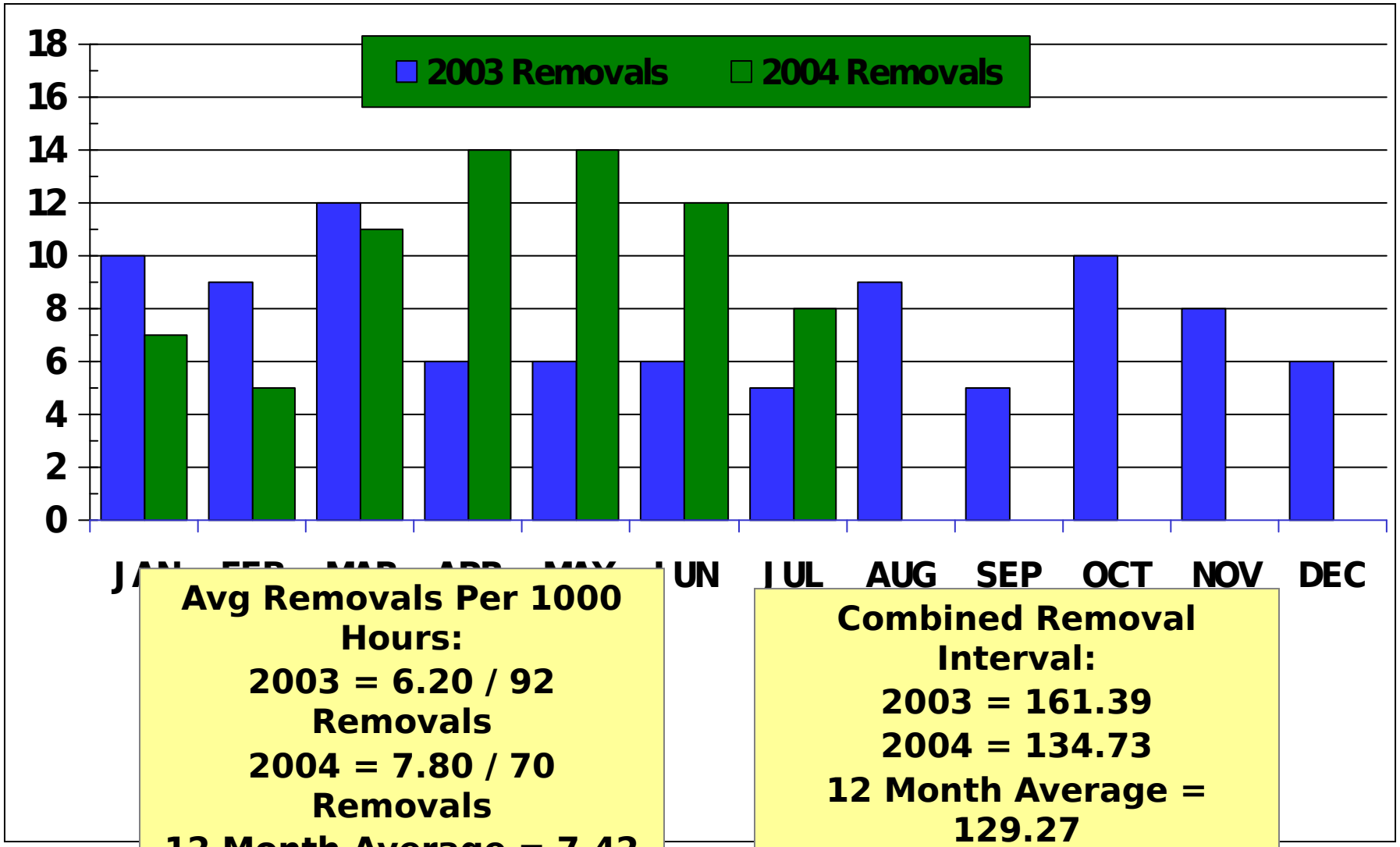

Avg Removals Per 1000 Hours:
2003 = 6.20 / 92 Removals
2004 = 7.80 / 70 Removals
12 Month Average = 7.42

Combined Removal Interval:
2003 = 161.39
2004 = 134.73
12 Month Average = 129.27

12 MONTH REMOVALS

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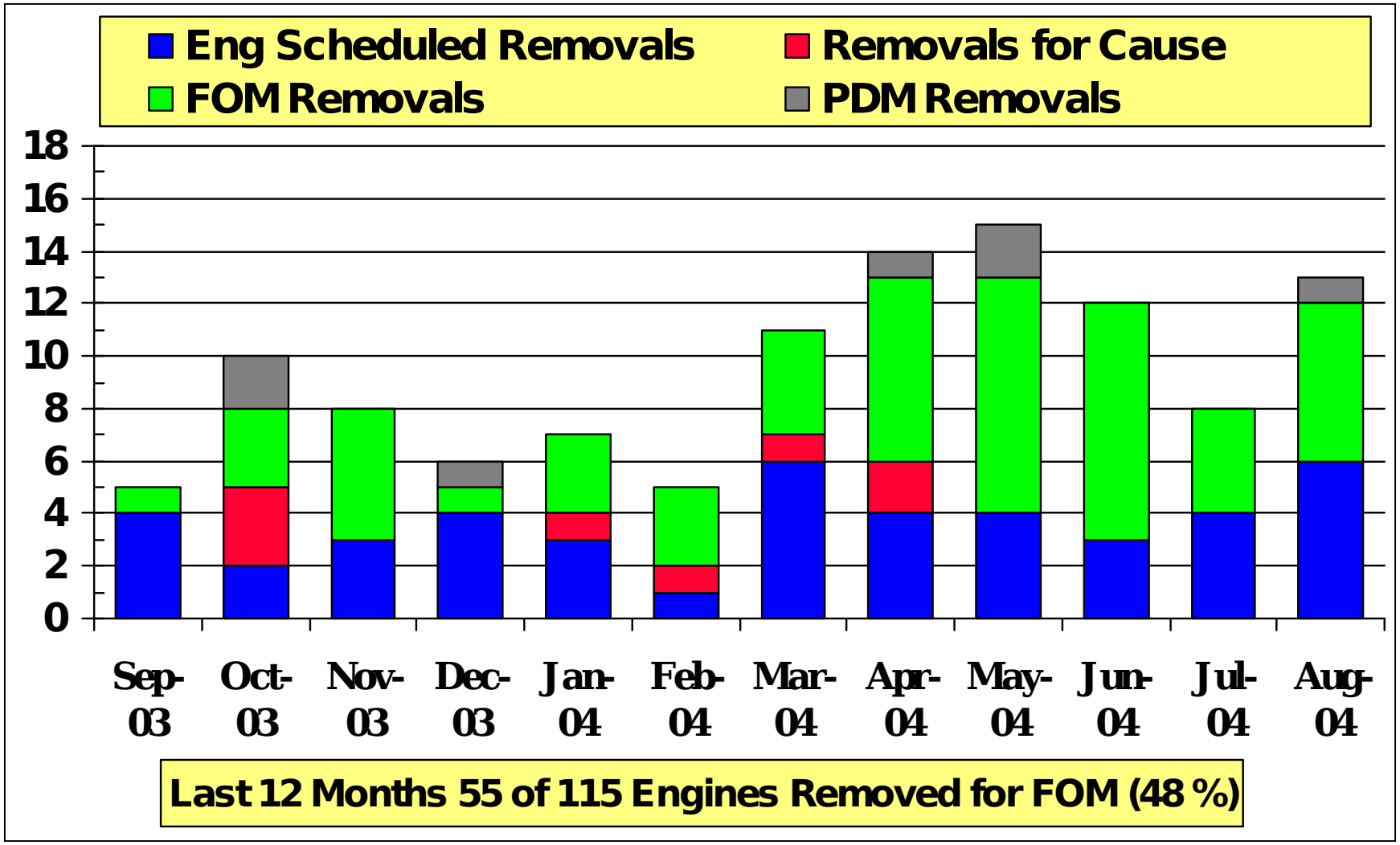

Last 12 Months 55 of 115 Engines Removed for FOM (48 %)

FY04
UNSCHEDULED ENGINE REMOVALS

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FY 04 Removals

Eng/Loc	Date	Depot	A/C	Driver		Status
590134/D4		Apr 04		Y	1077	Low Power/Thrust
	Replaced EFTC and Pyro					
590149/B		Apr 04		Y	1069	Oil Leak
	AWM					
590155/D4		Mar 04		Y	1099	Smoke on Shutdown
	AWM					
590104/D4		Feb 04		Y	1084	Bent 4th Stg Blade
	INW					
590154/B		Jan 04		Y	1070	FOD
Replaced blade						
590148/FT		Oct 03		Y	336	Aft Drain Oil Leak
	O-Ring/Gasket Replaced					
590113/B		Oct 03		Y	1068	Aft Sump Oil Leak
	O-Ring/Gasket Replaced					
590151/FT		Oct 03		Y	1064	Low Oil Pressure
	Replaced Seal Housing					

FY03
UNSCHEDULED ENGINE REMOVALS

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FY 03 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590142/D4	Aug 03	Y	1070	Front Sump Oil Leak O-Ring Replaced	
590130/FT	Jul 03	Y	336	Flameout MEC Contamination	
590146/D1	Jun 03	Y	1066	High Fuel Consumption Met Specs	
590133/D4	Apr 03	N	1073	Engine Vibration CND - Serviceable	
590134/D4	Mar 03	Y	1084	1st Stage Fan Blade Crack RTN Field/No Crack	
590149/D4	Mar 03	N	1076	Oscillation/Nozzle Carbon Serviceable RFI	
590151/N	Mar 03	Y	1097	IGV Inner Bushing Wear R&R Bushings	
590122/D4	Feb 02	N	1076	Engine Idle Vibration Serviceable/TM Changes	
590124/B	Dec 02	Y	1079	Engine Vibration C/W	
590108/P	Oct 02	Y	1086	Engine Vibration	C/W

UER DRIVERS

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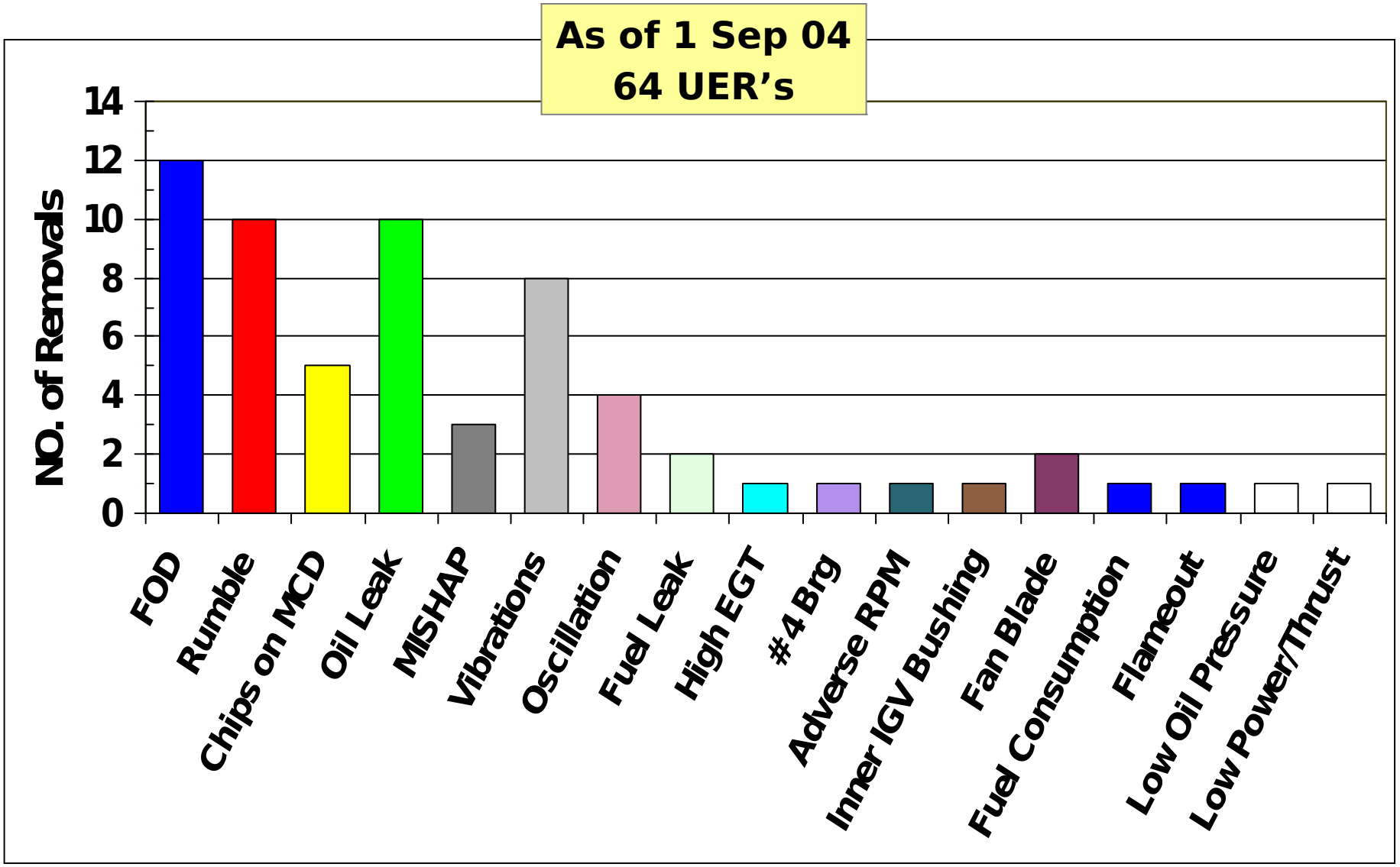
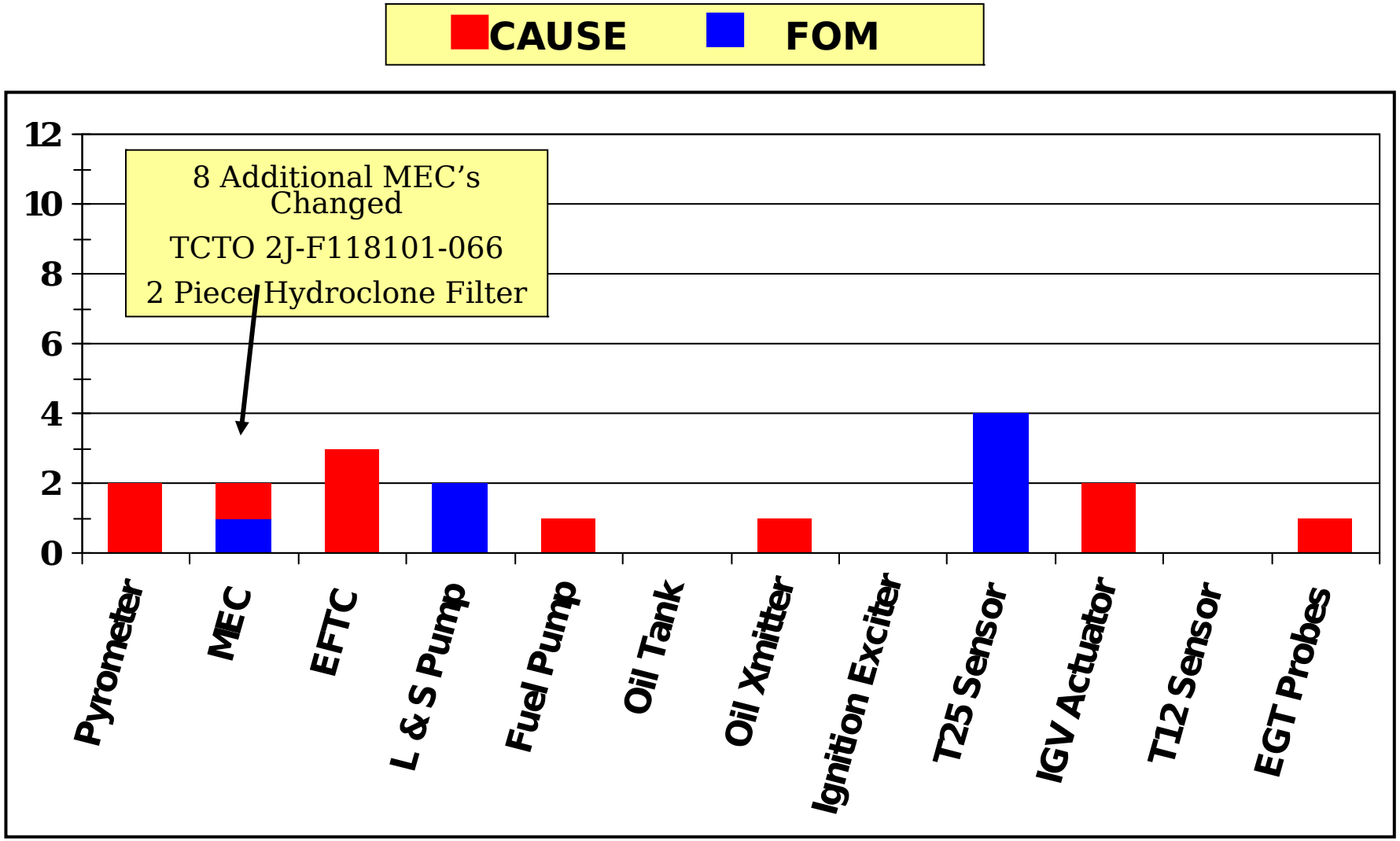


LRU DRIVERS
1 Sep 03 – 31 Aug 04

Rapidly delivering war-winning capability



DEFICIENCY REPORT STATUS

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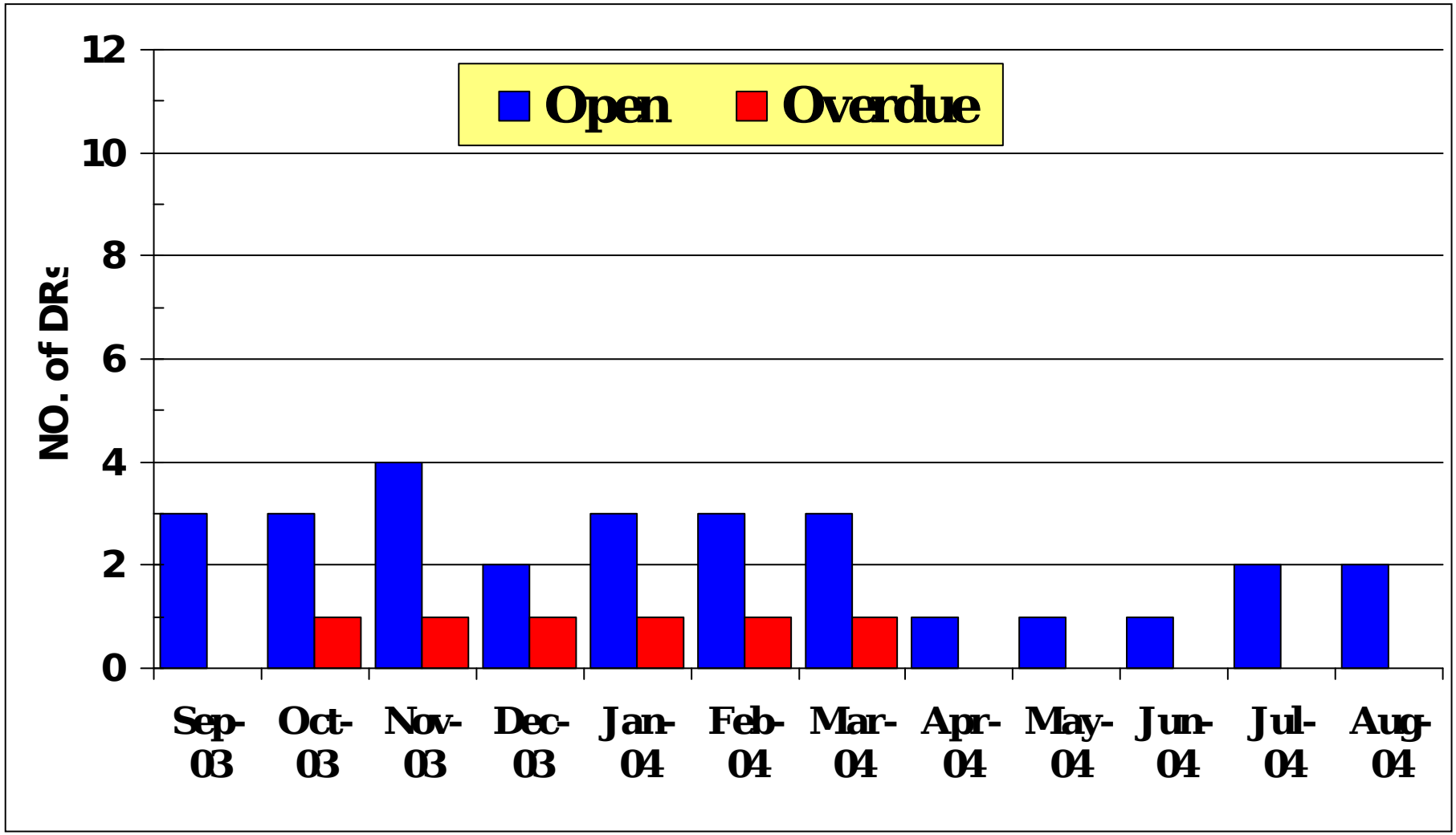

FIELD TCTO INSPECTIONS

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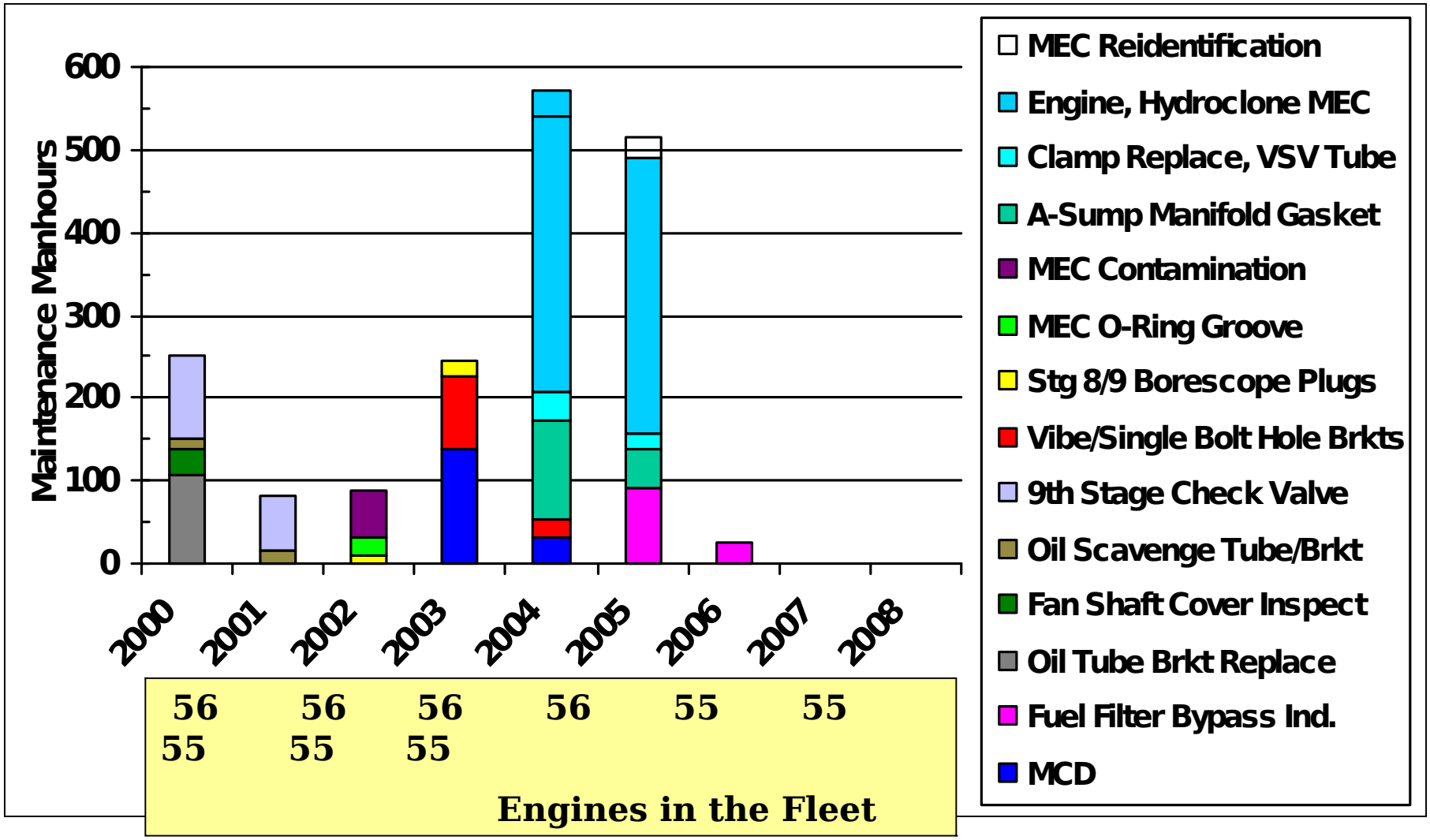

FIELD TCTO STATUS
1 Sep 04

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TCTO Title	TCTO Number	Total Required	Number Accomplished
MEC Re-Identification	2J -F118101-0067	27	0
MEC Replacement (Hydroclone Filter)	2J -F118101-0066	55	16
A- Sump Manifold Gasket	2J -F118101-0062	55	38
Vibe/Single Bolt Hole Brackets	2J -F118101-0059	56	54
Fuel Filter Imminent Indicator (Pump)	2J -F118101-0058	Awaiting Release	Awaiting Release
Fuel Filter Impending Indicator (Engine)	2J -F118101-0057	Awaiting Release	Awaiting Release
Stage 8/9 Borescope Plug	2J -F118101-0055	56	54
9th Stage Check Valve	2J -F118101-0053	56	56
Inspect Oil Scavenge Tube for Wear	2J -F118101-0052	56	56
Master Chip Detector	2J -F118101-0048	55	55

DEPOT TCTO STATUS

1 Sep 04

Rapidly delivering war-winning capability

TCTO Title	TCTO Number	Total Required	Number Accomplished
MEC O-Ring Groove	2J -F118101-0061	7	7
Replace #4 Bearing/Retaining Nut	2J -F118101-0060	55	16
Lube and Scavenge Pump Upgrade	2J -F118101-0056	73	15
T25 Sensor Rework	2J -F118101-0054	161	19
Oil Scavenge Tube Bracket Rework	2J -F118101-0051	56	19
HPT Disk Inspection and Re-Identification	2J -F118101-0050	43	12
Turbine Frame Oil Tube Heat Shield	2J -F118101-0049	59	24
Forward Sump Cover Modification	2J -F118101-0045	56	15
Stage One Fan Blade Inspection	2J -F118101-0041	1554	446
HPT Nozzle Cooling Cover Rework	2J -F118101-0040	56	20
Turbine Frame Fwd Liner Support	2J -F118101-0039	59	59
Auxiliary Oil Tube Bracket	2J -F118101-0038	58	16
Moeller Fittings	2J -F118101-0037	56	13
Lube and Scavenge Pump Improvements	2J -F118101-0036	71	32
MEC Upgrade to 1754M92P05	2J -F118101-0035	57	22

DEPOT TCTO STATUS

1 Sep 04

Rapidly delivering war-winning capability

Continued

TCTO Title	TCTO Number	Total Required	Number Accomplished
Electrical Bracket Replacement - Clips	2J -F118101-0034	5	3
VSV Long Term Improvements Bell Cranks	2J -F118101-0033	16	9
VSV Arm material Change	2J -F118101-0032	28	10
VSV Reliability Improvements	2J -F118101-0031	16	8
Inspection of Sump Ejector Tube Seals	2J -F118101-0030	15	9
HPT Disk Forward Rabbet Inspection	2J -F118101-0029	4	1
Aft Centerbody Under Min Inspection	2J -F118101-0027	28	21

ISSUES

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- JP8+100 Conversion
- 4 MM Combustor Cowl Inspection
- MEC Hydroclone Filter

JPTS to JP-8+100 CONVERSION

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AERONAUTICAL SYSTEMS CENTER

Status: 1 Sep 04 Update (No Change)

Background: AFRL/PRTG selected 2 additives for test in 2002

- **Combustor testing at GEAE, 5 Cup Sector/Characterization**
  - Testing of the two initial additives identified problems with coking and re-lite capability
- **Original requirement focused on achieving lowest temp possible with no regard to combustion**

- **New Plan**
  - Reformulate low temp additives with emphasis on both low temp behavior and combustion
  - Evaluate low temp behavior of JPTS and candidate JP8+100LT using U-2 fuel system simulator
  - Demonstrate combustibility of JP8+100LT in small scale engine component testing
  - Will cause a 12 – 18 month delay
- **Follow-on testing, Sea Level and Altitude to be re-scheduled**
- **ESN 590134 identified as next candidate engine**
- **Tentative time frame is FY 04/3 – 4**
- **Funding delta exists for FY03-05**
- **AFRL/PRTG progress**
  - Two new additives have been synthesized and initial experiments successfully completed
  - Internal design review being planned for April 2004 to confirm additive is ready for engine, airframe pre-qualification
- **Program Status/Milestone review scheduled for 29 Apr 04**
  - Review identified
    - Funding requirement for sector testing & GEAE support
    - Funding requirement for transition activities
- **AFRL/PR to contact GE to discuss and develop strategy for drafting a complete qualification plan (combustion, annular, full engine testing, etc.)**

4MM Combustor Cowl Inspection

Status: 1 Sep 04 Update (No Change)

- TM Change requirements under review
- 4MM Borescopes being procured
- Locally manufactured tooling being worked
- Procurement of additional tooling in work
  - Some discrepancies noted in recommended PN's
    - GEAE Still having difficulty identifying correct tooling
    - GEAE establishing prints for local manufacture of tooling
  - All tooling discrepancies corrected
  - Remaining tools being procured or locally manufactured
- Inspections to begin with completion of above
  - Tentative start date 1 Oct 04

MEC Hydroclone Filter

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Status: 1 Sep 04 Update

- 2 TCTO's released
  - TCTO 2J-F118101-0066, Replacement of MEC with 2 piece hydroclone filter
    - TCTO Requires inspection of all MEC SN's along with replacement of suspect SN's
    - 16 of 55 C/W
    - All but one MEC replaced at OL's, installs only
      - Last required OL MEC on sight for last install
    - 3 MEC's at Beale for installs
    - Six additional MEC's in work at Woodward
      - Expect release of 2 – 4 MEC's week of 7 Sept 04
    - All MEC's going through Woodward to have "N" stamped on data plate
  - TCTO 2J-F118101-0067, Re-identification of all fielded 1 piece hydroclone filter MEC's
    - TCTO released 2 Sep 04
    - Requires a "N" to be stamped on data plate

ENGINE LIFE MANAGEMENT

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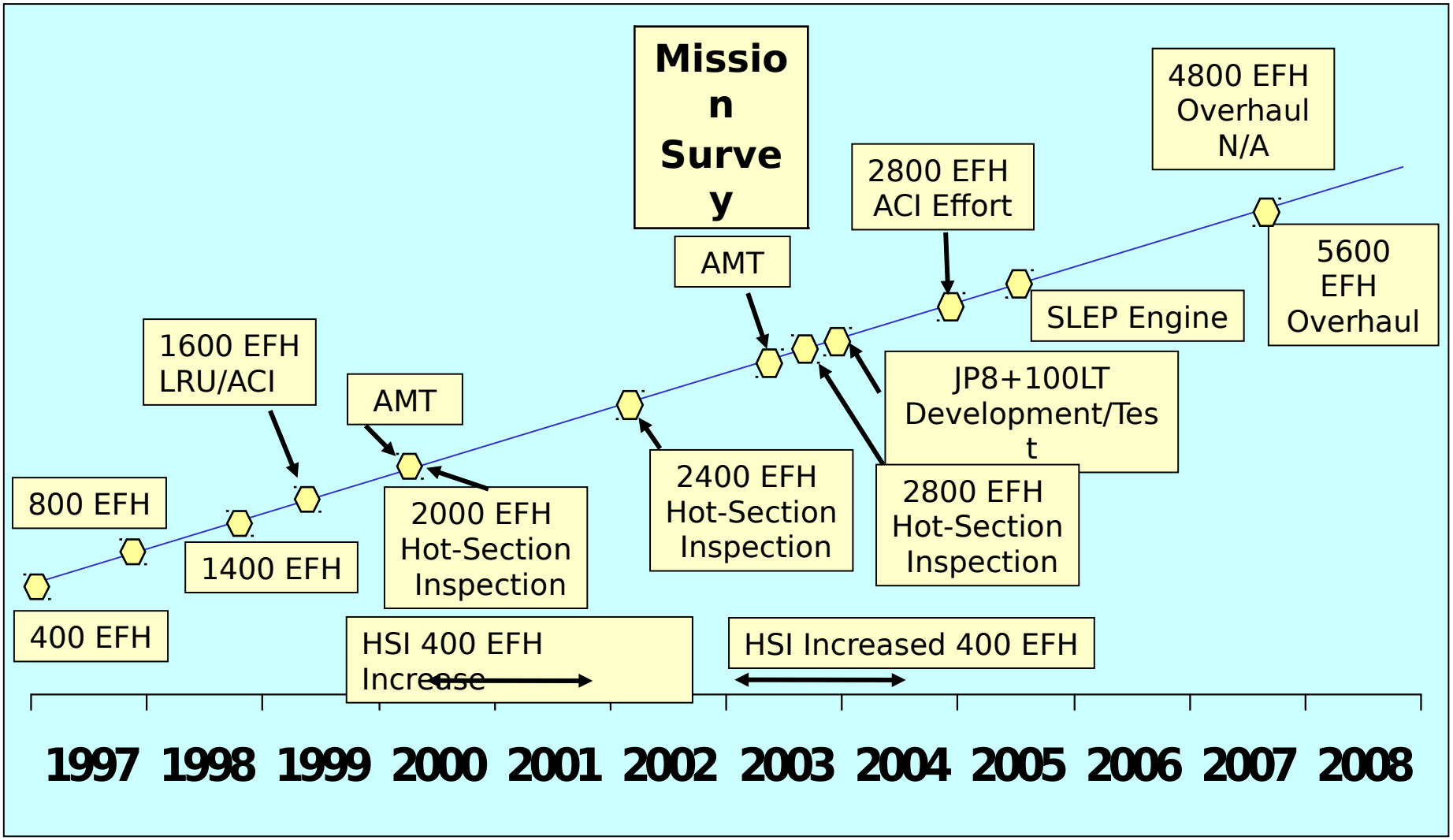

PROGRAM ASSESSMENT

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Areas	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Get Well Date and/or Comments
Performance	G	G	G	G	G	G	G	G	G	G	G	G	
Cost Performance	G	G	G	G	G	G	G	G	G	G	G	G	
Funding	G	G	G	G	G	G	G	G	G	G	G	G	
Contracts	G	G	G	G	G	G	G	G	G	G	G	G	
Production/Spares	Y	Y	Y	Y	Y	Y	G	G	G	G	G	G	
Management Structure	G	G	G	G	G	G	G	G	G	G	G	G	
OVERALL	G	G	G	G	G	G	G	G	G	G	G	G	
KEY													
GREEN =	**ON TRACK**												
YELLOW =	**POTENTIAL/ACTUAL PROBLEM**												
RED =	**MAJOR PROBLEM**												

FY02 – FY03
UNSCHEDULED ENGINE REMOVALS

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FY 03 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590142/D4	Aug 03	Y	1070	Front Sump Oil Leak	INS Depot
590130/FT	Jul 03	Y	336	Flameout	MEC Contamination
590146/D1	Jun 03	Y	1066	High Fuel Consumption Met Specs	
590133/D4	Apr 03	N	1073	Engine Vibration	CND - Serviceable
590134/D4	Mar 03	Y	1084	1st Stage Fan Blade Crack	RTN Field/No Crack
590149/D4	Mar 03	N	1076	Oscillation/Nozzle Carbon	Serviceable RFI
590151/N	Mar 03	Y	1097	IGV Inner Bushing Wear	R&R Bushings
590143/Q	Aug 02	N	3297	Engine Vibration	Serviceable/TM Changes
590144/Q	Jun 02	N	1094	Oil Leak	C/W
590146/B	May 02	N	1065	Adverse RPM Trend	C/W
590108/P	Oct 02	Y	1086	Engine Vibration	C/W

FY 02 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590122/D4	Feb 02	N	1076	Engine Idle Vibration	A/I/Sea Level Testing
590124/B	Dec 02	Y	1079	Engine Vibration	C/W
590118/FT	Feb 02	N	336	FOD	C/W